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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/777,796	02/12/2004	Clint Allen Luttgeham	3128W	5843
7590		10/26/2004	EXAMINER	
Robert O. Blinn		TRIEU, THAI BA		
P.O. Box 75144		ART UNIT		
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3748

DATE MAILED: 10/26/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/777,796

Applicant(s)

LUTTGEHARM, CLINT ALLEN

Examiner

Thai-Ba Trieu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-16, 18-22, 24 and 25 is/are rejected.
- 7) ☐ Claim(s) 6, 17 and 23 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>08/10&09/10/04</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are cancelled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Since applicants omitted claim 14, the examiner, pursuant to rule 1.126, has renumbered claims **15-26** as claims **14-25**. The rejections set forth below are based on the renumbered claims.

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character **"64"** has been used to designate both **"pressure supply valve"** (See paragraph [0041], line 9) and **"pressure regulator"** (See Paragraph [0041], line 12). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of

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any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character **"72D"** has been used to designate both **"combustion initiators"** (See paragraph [0039], lines 15 and 17) and **"ignition initiators"** (See Paragraph [0039], line 24; and Paragraph [0042], lines 24 and 28). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: **"indexing portion 90"** (See Paragraph [0045], line 1), **"a scalloped retaining disc 92B"** (See Paragraph [0045], line 6), and **"retaining disc 92B"** (See Paragraph [0045], line 8). Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the

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description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

- On Page 4, a brief description for **Fig 1A** should be inserted after paragraph [0006], in brief Description of the Drawings.

Appropriate correction is required.

Claim Objections

Claims 1 and 15-26 are objected to because of the following informalities:

- In claim 1, part (f), -- **and** -- should be inserted after "cylinder,"
- In claim 15-26, line 1, should be replaced by following:
 - **[[15.]] 14.** The internal combustion engine of claim 1, --
 - **[[16.]] 15.** The internal combustion engine of claim 1, --
 - **[[17.]] 16.** The internal combustion engine of claim 1, --

- [[18.]] 17. The internal combustion engine of claim 1, --
- [[19.]] 18. In combination with an internal combustion engine, --
- [[20.]] 19. The system of claim 18, --
- [[21.]] 20. The system of claim 18, --
- [[22.]] 21. The system of claim 18, --
- [[23.]] 22. The system of claim 18, --
- [[24.]] 23. The system of claim 18, --
- [[25.]] 24. The system of claim 18, --
- [[26.]] 25. The system of claim 18, --

Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 16 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically:

- Line 7, the recitation of “**may be**” renders the claim indefinite, since it is not clear that under which condition the second crankshaft may be adjusted, and under which condition the second crankshaft may not be adjusted. Applicant is required to identify these conditions for the second crankshaft.

- Line 9, the recitation of ***“may be”*** renders the claim indefinite, since it is not clear that under which condition the effect volumetric compression ratio of the engine may be adjusted, and under which condition the effect volumetric compression ratio of the engine may not be adjusted. Applicant is required to identify these conditions for the effect volumetric compression ratio of the engine.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-5, 7-9, and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Lowther (Patent Number 4,215,659).

Regarding claim 1, Lowther discloses an internal combustion engine comprising:

a. a combustion cylinder (Not Shown, in the engine 12) including a cylinder and a reciprocating piston, said reciprocating piston oscillating within the cylinder in cycles which include a power stroke in which said piston moves from a top dead center position to a bottom dead center position and a return stroke in which said piston moves from said bottom dead center position to said top dead center position, said power stroke further divided into a first half portion and a second half portion and said

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return stroke further divided into a first half portion and a second half portion, (See Abstract);

b. a compressor (16, 18) for producing compressed air (See Figure 8);

c. a compressed air conduit (via 40) communicating between the compressor (16, 18) and said combustion cylinder (Not Shown, in the engine 12) (See Figures 8-9);

d. a compressed air valve (Not shown, each internal combustion engine having intake and exhaust valves) for opening and closing communication between the compressor (16, 18) and said combustion cylinder (Not Shown, in the engine 12) (See Figure 8);

e. a fuel injector (22) for injecting fuel into said volume of compressed air (See Figure 8);

f. an exhaust means (Not shown, each internal combustion engine having intake and exhaust valves) for releasing exhaust from said combustion cylinder (via 20) (See Figure 8); and

g. a timing system for :

i. opening said compressed valve;

ii. activating said fuel injector;

iii. opening said exhaust means (See Figures 4-12, Column 3, lines 46-68, columns 4-5, lines 1-68, and column 6, lines 1-13).

Regarding claims 2-5, 7-9, and 13-15, Lowther further discloses:

a combustion initiator for initiating combustion of said fuel-air mixture, the activation of said combustion initiator timed by said timing system to occur after said fuel injector has been activated (See Column 4, lines 19-25);

a heat-rejecting portion (38) for cooling said at least a portion of said compressed air (See Figure 8);

a reservoir (32) for accumulating and storing said compressed air (See Figure 8);

said compressed air conduit (40) comprising a reservoir (32) for accumulating and storing said compressed air and a heat rejecting portion (38) for cooling said at least a portion of said compressed air (See Figure 8);

said compressed air valve being operatively associated with said piston of said combustion of said combustion cylinder by said timing system to open communication between said compressed air conduit and said combustion cylinder during a portion of said cylinder cycle within said second half portion of said return stroke; wherein said compressed air valve being a stem valve and a rotary valve (See Figures 8-12, Column 3, lines 46-68, columns 4-5, lines 1-68, and column 6, lines 1-13);

said combustion cylinder being one of a plurality of combustion cylinders (an internal combustion engine, there are more than one combustion cylinders);

said compressor including a compressor cylinder (See Column 6, lines 10-13);

said combustion cylinder including a crankshaft (via 14) and a connecting rod (See Figure 9) coupling the piston and the crankshaft (14); and said compressor

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including a compressor cylinder including a piston mechanically coupled to said crankshaft (via 14) (See Figure 8).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10-11 and 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lowther (US 4,215,659) in view of Duve (US 5,711,265).

Lowther discloses in combination with an internal combustion engine of the type including a combustion chamber (see Figures 8-9) with a connecting rod connecting said piston with a crankshaft, which oscillating between a minimum volume and a maximum volume during alternating expansion portion and contraction portions of successive cycles for causing continuous powered rotation of a drive shaft, a system for injecting compressed air into said combustion chamber comprising a compressed air source (16, 18, 32, 38, 40) in communicating with said combustion chamber (See Figure 8);

said compressed air source comprising a compressor (16, 18) and a compressed air conduit (40) communicating between said compressor and said combustion chamber, and said compressed air conduit comprising a heat rejecting

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(38) portion for cooling said at least a portion of said compressed air and a reservoir (32) for accumulating and storing said compressed air (See Figure 8, Column 3, lines 46-68, columns 4-5, lines 1-68, and column 6, lines 1-13).

However, Lowther fails to disclose an indexed rotary valve.

Duve teaches that it is conventional in the rotary valve drive mechanism art, to utilize an indexed rotary valve for governing between said compressed air source and said combustion chamber, said indexed rotary valve including a valve body and an indexing means (25, 27) coupling of said valve body (17, 20) and with said drive shaft (18, 21) for causing intermittent rotation of said valve body in response to said continuous rotation of said drive shaft during portions of said successive cycles of said combustion chamber, said valve including a passage (23, 24) for providing communication between said compressor air source and said combustion chamber during intermittent rotation of said valve body (See Figures 1-4 and 6-9).

It would has been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized an indexed rotary valve, as taught by Duve, to improve efficiency of the Lowther device.

Claims 12 and 24-25 are rejected under 35 U.S.C. 103(a) as being obvious over Lowther (US 4,215,659) in view of Jones et al. (US 4,989,641).

Lowther discloses the invention as recited above; however, Lowther fails to discloses the detailed structures of an indexing mechanism.

Jones et al. teaches that it is conventional in the rotary valve drive mechanism

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art, to utilize an indexing mechanism including a drive wheel (154, 156, 158) and an indexing wheel (144); said drive wheel having at least one cog (176) and retaining disc (158c), said indexing wheel coupled to said valve body and having at least one slot (148) for receiving said at least one cog (176) of said drive wheel for intermittent motion of said indexing wheel in response to continuous rotating motion of said cog (176) of said drive wheel during a first motion of the rotational cycle of said drive wheel, and said indexing wheel comprising at least one retaining feature compatible with said retaining disc (158c) of said drive wheel (144), and having a second complementary set of engaging features including one scalloped portion (150) at least one complementary circular retaining portion (158c) in said drive wheel for locking said indexing wheel from rotation during a second portion of rotation of said drive wheel (See Figure 3, Column 6, 67-68, Column 7, lines 1-68, Column 8, lines 46-68, and Column 9, lines 1-3).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the detailed structures of an indexing mechanism, as taught by Jones et al., to improve efficiency of the Lowther device.

Allowable subject matter

Claims 6, 17, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 16 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

The IDS (PTO-1449) filed on August 10 and September 10, 2004 have been considered. Each initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Bohach et al. (US Patent Number 6,308,677 B1) disclose an overhead rotary valve for engines.
- Kutlicinar (US Patent Number 6,293,242 B1) discloses a rotary valve system.
- Ktlucinar (US Patent Number ,5490,485) discloses a rotary valve for an internal combustion engine.
- Gagas (US Patent Number 5,244,013) discloses a water conditioner rotary valve drive system.
- Matsuura et al. (US Patent Number 4,776,306) discloses a valve operating system for an internal combustion engine.
- Johnson (US Patent Number 4,653,269) discloses a heat engine.
- McFee (US Patent Number 4,333,424) discloses an internal combustion engine.

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- Kiener (US Patent Number 4,040,400) discloses an internal combustion process and engine.

- Guenther (US Patent Number 4,036,184) discloses a stratified charge engine.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703) 308-6450. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

However, the examiner's new telephone number (751) 272-4867 will become effective after the expected changeover date of November 22, 2004.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
October 25, 2004


Thai-Ba Trieu
patent Examiner
Art Unit 3748